BEFORE THE DEPARTMENT OF NATURAL RESOURCES
AND CONSERVATION OF THE STATE OF MONTANA

In the matter of the proposed amendment of ARM 36.12.101, definitions and ARM 36.12.120, basin closure area exceptions and compliance	))))	NOTICE OF AMENDMENT

To: All Concerned Persons

1. On September 26, 2007, the Department of Natural Resources and Conservation published MAR Notice No. 36-22-121 regarding a notice of public hearing on the proposed amendment of the above-stated rules at page 1164 of the 2007 Montana Administrative Register, Issue No. 16.

2. The department has amended ARM 36.12.101 and 36.12.120 as proposed but with the following changes from the original proposal, matter to be stricken interlined, new matter underlined:

36.12.101 DEFINITIONS Unless the context requires otherwise, to aid in the implementation of the Montana Water Use Act and as used in these rules:

(1) through (7) remain as proposed.

(8) through (31) remain as proposed.

(32) through (36) remain as proposed.

(37) "Net depletion" for the purposes of 85-2-360, MCA, means the calculated volume, rate, timing, and location of reductions to surface water resulting from a proposed groundwater appropriation that is not offset by the corresponding accretions to surface water by water that is not consumed and subsequently ~~returned~~ returns to the surface water.

(38) through (48) remain as proposed.

(49) "Potentially affected area" for the purposes of 85-2-361, MCA, means, as referred to in basin closure rules and in the context of a ~~net depletion analysis~~ hydrogeologic assessment, the area or estimated area where groundwater will be affected by a proposed project. The identified area is not required to exceed the boundaries of the drainage subdivisions established by the Office of Water Data Coordination, United States Geological Survey, and used by the Water Court, unless the applicant chooses to expand the boundaries.

(50) through (78) remain as proposed.

36.12.120 BASIN CLOSURE AREA EXCEPTIONS AND COMPLIANCE

(1) through (4) remain as proposed.

~~(5) In a basin closure area, evaporation losses must be mitigated.~~

(5) An applicant must identify the potentially affected area and provide a map depicting that area.

(6) A net depletion analysis must be submitted with the water right application and must include but is not limited to analysis of the following factors within the potentially affected area:

~~include hydrogeologic data or a model developed by a hydrogeologist, a qualified scientist, or a qualified licensed professional engineer.~~

~~(a) The net depletion analysis must include but is not limited to analysis of the following factors within the potentially affected area:~~

~~(i) The degree of hydraulic connection between the source aquifer and all potentially affected surface water. Surface water means, in addition to ARM 36.12.101(63) and for the purposes of 85-2-360 through 85-2-362, MCA, includes but is not limited to rivers, streams, irrigation canals, or drains.~~

~~(ii) The average monthly flow rate and volume of water consumed for a proposed project.~~

~~(iii) Propagation of drawdown from a well or other groundwater diversion and rate, timing, and location of any resulting surface water depletion effects.~~

~~(iv) The volume, rate, timing, and locations of accretions to surface water by water that is not consumed and is subsequently returned to surface water.~~

~~(b) The determination of the degree of hydraulic connection between a source aquifer and surface water within the potentially affected area must include an analysis of geology and static groundwater elevations relative to the elevation of surface water beds. Such analysis must include:~~

~~(i) Groundwater boundaries identified by the applicant for the potentially affected area. The identified area does not need to extend beyond the boundaries of the water right basins used by the department and established by the Office of Water Data Coordination, United States Geological Survey and used by the Water Court, unless the applicant chooses to expand the boundaries. The following information must be included with the application to establish the location of the aquifer boundaries:~~

~~(A) a description of how the potentially affected area was delineated;~~

~~(B) geologic maps (including stratigraphy and structure), well-log data, and aquifer testing;~~

~~(C) the extent (vertical and lateral) and properties of a source aquifer (hydraulic conductivity, transmissivity, storage coefficient, flow direction, rate of movement, and water availability) and any confining layers; and~~

~~(D) the presence of any faults, all relative to the locations of potentially affected surface water.~~

~~(ii) Evidence and supporting information of the degree of hydraulic connection between the source aquifer and surface water sources located within the potentially affected area, including but not limited to rivers, springs, creeks, streams, reservoirs, lakes, irrigation canals, or drains that may or may not show a net depletion. The assessment may include, but is not limited to the following:~~

~~(A) map showing locations of potentially affected surface water;~~

~~(B) the distance between the proposed points of diversion and potentially affected surface water;~~

~~(C) geologic map from United States Geological Survey or Montana Bureau of Mines and Geology of the potentially affected area;~~

~~(D) using existing test and production well logs, cross-section(s) showing source aquifer and any confining layers;~~

~~(E) aquifer test results and interpretation of those results;~~

~~(F) locations where bedrock aquifers outcrop beneath surface water and where alluvial aquifers exist in the potentially affected area;~~

~~(G) relevant stream-flow data from United States Geological Survey or other published source for rivers, springs, creeks, streams, reservoirs, lakes, irrigation canals, or drains within the potentially affected area;~~

~~(H) relative elevations of groundwater and surface water beds in the potentially affected area, as determined by measuring static water levels in wells that have been surveyed relative to surface water bed elevations;~~

~~(I) hydrographs of groundwater levels and surface water flows in the area of potential effect;~~

~~(J) monitored groundwater levels and measured surface water gains and losses; and~~

~~(K) any surface water measurements that have been made by the applicant, or another, including but not limited to canal, drain, water commissioner, or other stream gauging records.~~

~~(iii) Existing water rights - an applicant must provide the following information:~~

~~(A) a list and map of the points of diversion of surface water appropriation rights, including but not limited to rivers, springs, creeks, streams, reservoirs, lakes, irrigation canals, or drains located within the potentially affected area; and~~

~~(B) a list and map of the points of diversion of groundwater rights on record with the department that are located within the potentially affected area.~~

~~(c) The flow rate diverted and the volume of water consumed by a proposed project must include an analysis of:~~

~~(i) the flow rate and period of diversion of water actually diverted for the proposed project as compared to that diverted for like beneficial uses; and~~

~~(ii) estimates of the average monthly flow rate and volume consumed by evaporation, plant transpiration (evapotranspiration), interception losses, depression storage losses, and all other forms of consumption associated with the proposed project. Interception losses include that portion of precipitation which wets and adheres to surface objects, such as vegetation and other cover, and is returned to the atmosphere through evaporation. Depression storage losses include that portion of precipitation that is trapped in small surface depressions and returned to the atmosphere through evaporation:~~

~~(A) consumed water calculation - the following methods may be used to determine the rate and volume of water consumed by the proposed project:~~

~~(I) for irrigation or lawn and garden use, the potential evapotranspiration losses via measurements or computations using a method that is scientifically defensible;~~

~~(II) household consumption estimates from generally accepted published data and guidelines; and~~

~~(III) wastewater treatment estimates considering evaporation rates from lagoons and evapotranspiration rates from disposal beds or flow measurements from similar existing systems.~~

~~(d) An analysis of the drawdown must include the volume, rate, timing, and location of any resulting surface water depletion effects, within the potentially affected area caused by pumping the proposed well or other groundwater diversion, including at a minimum, but is not limited to the following:~~

~~(i) the distance between a well and any potentially affected surface water;~~

~~(ii) depth of a well;~~

~~(iii) aquifer properties from aquifer tests, existing data, or other previous studies;~~

~~(iv) the location of all wells or other sources of groundwater of record within the potentially affected area;~~

~~(v) the degree of connection between the surface water and the source aquifer to the proposed well;~~

~~(vi) pumping schedule for the proposed project;~~

~~(vii) confining layer properties from source aquifer testing; and~~

~~(viii) location and type of source aquifer boundaries.~~

(a) evidence addressing the hydraulic connection between the source aquifer and all surface water. Surface water means, in addition to ARM 36.12.101(64) and for the purposes of 85-2-360 through 85-2-362, MCA, includes but is not limited to irrigation canals and drains;

(b) evidence of propagation of drawdown from pumping a proposed well or other groundwater diversion and volume, rate, timing, and location of any resulting surface water effects;

(c) evidence of the comparison of the proposed flow rate and period of diversion to similar types of existing water uses;

(d) estimates of the monthly volume of water consumed by a proposed project through evaporation, evapotranspiration, and all other forms of consumption associated with the proposed project;

(e) ~~An~~ an ~~evaluation~~ assessment of potential return flows to a source aquifer or surface water source ~~within the potentially affected area must be included~~ and ~~must identify~~ the volume, rate, timing, and location of return flows~~.~~ ;

~~(i)~~ (f) ~~In~~ in addition to ARM 36.12.101~~(57)~~ (56) and for the purposes of 85-2-361, MCA, return flow~~s~~ includes but is not limited to any treated wastewater if the treated wastewater will be used as part of an aquifer recharge plan~~.~~ ;

~~(f) Drawdown from a well and the volume, rate, timing, and location of any resulting gross surface water depletion which depends on:~~

~~(i) the distance between a well and surface water;~~

~~(ii) the depth of the well;~~

~~(iii) aquifer properties;~~

~~(iv) location of aquifer boundaries; and~~

~~(v) the degree of hydraulic connection between surface water and the source aquifer to the well.~~

(g) the volume, rate, timing, and locations of accretions to surface water that is not consumed and subsequently returns to surface water; and

~~(g)~~ (h) ~~A~~ a water balance table must be included that describes the monthly and total annual water balance for the proposal. ~~It must include an accounting of the following:~~

~~(i) the volume of water that would be diverted;~~

~~(ii) the volume of water that would be consumed;~~

~~(iii) the volume of water that would return to an aquifer and to surface water; and~~

~~(iv) the volume of net depletion to surface water, including but not limited to rivers, springs, creeks, streams, reservoirs, lakes, irrigation canals, or drains.~~

(7) An applicant must provide a list and map of the points of diversion of surface water appropriation rights and groundwater rights on record with the department that are located within the potentially affected area.

~~(h)~~ (8) Information required by the hydrogeologic assessment may not be sufficient to meet applicable criteria under 85-2-311, MCA, including but not limited to adverse effect to a prior appropriator. The applicant for a beneficial water use permit pursuant to 85-2-311, MCA, is responsible for providing sufficient evidence to meet all applicable criteria.

3. The following comments were received and appear with the department's responses:

COMMENT 1

The proposed amendments to ARM 36.12.120 attempt to present an exhaustive listing of all the hydrological elements that must be considered by an applicant to secure the use of water for beneficial purposes. The list includes many items that a trained professional would consider as standard practice when performing a hydrological accounting of water resources. However, there are a number of items that are impossible to ascertain beyond any reasonable doubt with no specific or even general evaluation criteria referenced or presented in the proposed amendments. The amendments also do not clearly identify the procedures and scientific protocol that would be used and be acceptable to the DNRC. The proposed amendments are inadequate in providing a framework that results in an understandable, practical and objective preparation and analysis process for beneficial use applications.

RESPONSE 1

The department received comments that both encouraged the department to 1) adopt more detailed rules describing how data collection and analysis should be completed and 2) to adopt less detailed rules and rely on the professionals to determine what data collection and procedures would be needed to evaluate net depletions in closed basins. The department considered both alternatives and determined that, because basin closure areas are spread throughout the state and groundwater properties that data collection and analysis should be based on the conditions specific to the application. The department recognizes there are numerous ways in which an applicant might meet the requirements and is therefore adopting rules that will leave the applicant some flexibility. The department agrees that trained professionals should review the applicable statutes and provide information based on the water right application proposal. The department has removed many of the details published in the proposed adoption.

The department will review the data provided by an applicant and will determine if the produced data and evaluation of that data is scientifically sound. The department suggests that applicants consult with a department hydrogeologist before determining how net depletions will be estimated for a specific application.

The department may be able to offer valuable insight on the chosen methods based on its review of previous applications and its knowledge of groundwater properties within the area.

COMMENT 2
Many of the evaluation requirements presented in the proposed amendment are basic hydrologic principles which should be followed and/or examined to one degree or another by the professional. Portions of the proposed rules may apply in some situations, providing reasonable conclusions based on scientific interpretation, while in other situations, they provide useless and erroneous results. Yet the latter will be required when there is little or no reason to do so.

RESPONSE 2
The department agrees. Please refer to Response 1.

COMMENT 3
The rules state that the potentially affected area is not required to extend beyond the boundaries of the water right used by the department and established by the Office of Water Data Coordination, United States Geological Survey and used by the Water Court, unless the applicant chooses to expand the boundaries. The rule amendment is contradictory to the many other reporting criteria demanded of the applicant elsewhere in the ARM and hydrologic science. This also contradicts DNRC's policy regarding surface water and groundwater interconnection. An accurate hydrological balance will not result if portions of the hydrogeological system are left out.

RESPONSE 3
This rule has been removed because the requirement duplicates statute. The department recognizes that the statutory scope for the hydrogeologic assessment may not be sufficient to meet permitting criteria.

COMMENT 4
"Net depletion" as it is used in the ARM sections should be replaced with "hydrologic balance". This assumes that all hydrologic factors are considered in the analysis of the hydrologic system which results in either a net depletion or a net accretion.

RESPONSE 4
The term "net depletion" is a key term of the new statute and therefore, the department deems it necessary to retain the phrase in the rules. However, the department definition of the term appears to embody the comments raised.

COMMENT 5
The amendment appears to pay attention only to "accretions" that are the result of unused portions of diversions that are otherwise not consumed, not to other mechanisms that could contribute to net accretions to the surface water systems as a result of land use change. The evaluation of accretions associated with changes

to land use, i.e. storm water capture, decrease in evapotranspiration, the elimination of a pond, change in land use from agricultural to residential, etc, are ignored.

RESPONSE 5
The commenter is correct. In calculating net depletion only the waters returned to the system from the specified use are considered. Accretions associated with changes to land use could be part of a mitigation plan.

COMMENT 6
In addition, the proposed amendments are completely silent on the possible ramifications associated with a change in respective water use practices and their role in the hydrologic balance. This factor alone results in a considerable volume of water that becomes available to the surface water system in the vast majority of cases. Conversion from flood irrigation to residential use will reduce the consumptive use of water, yet its contribution is ignored in the proposed rule change. It should be noted that these potential accretions should not be construed to be intentional elimination of vegetation to gain evapotranspiration credit, but rather as a consequence of legitimate land use.

RESPONSE 6
These changes to water use practices may be part of a mitigation plan if the applicant is able to protect the prior water rights through a change of use as contemplated by statute.

COMMENT 7
Methods for determining the volume of water that falls on a parking lot that is either evaporated and or infiltrated are used routinely in the civil engineering field. The amount of water that evaporates from a small depression is approximated by applying an initial abstraction from the total amount of water which makes it to an infiltration structure. These methods should be identified and incorporated in the amended ARM as an acceptable method to evaluate any contribution or consumption of storm water runoff. There are no such technical references anywhere in the proposed amendment document.

RESPONSE 7
Please refer to Response 5.

COMMENT 8
In the context of closed basins, it appears that many of the hydrological issues currently identified in the proposed amendments have little bearing on the issuance of a water right since it is presumed by DNRC that water is simply consumed by any new request to appropriate. Thus, does the determination of volume, rate or timing of the depletion have any practical significance if consumption is automatically assumed?

RESPONSE 8

The department does not presume that water is simply consumed by any new request to appropriate. Also, 85-2-360(5), MCA, specifically states that prediction of net depletion does not mean that an adverse effect on a prior appropriator will occur, or if an adverse effect does occur, that the entire amount of net depletion is the cause of adverse affect. Therefore, the department cannot, nor will it presume, that water will be consumed water or that it will create an adverse affect. The department will review and base its decision on all the information provided by an applicant. However, it is the rare use of water that is nonconsumptive.

COMMENT 9

The proposed amendments fail to identify, reference, or mention the use of standard, scientifically acceptable criteria and methods when performing hydrological analysis. Incorporating these criteria, would not only serve the applicant well to understand the methodologies associated with DNRC's evaluation, but would provide a mechanism which the application can be objectively evaluated based on available data and best scientific and engineering practices that have been accepted by the scientific and engineering community.

RESPONSE 9

Please refer to Response 1.

COMMENT 10

Proposed rules will force people to use the permit exception for groundwater wells and develop individual 35 gpm up to ten acre-feet rather than develop central water systems.

RESPONSE 10

The department implements statutes as passed by the legislature and develops rules to accomplish that task.

COMMENT 11

The department proposes a regulatory structure that will prove itself unavailable to a great deal of Montana's citizens because of expense. The department clearly anticipates collection of geological, hydrological, and geographical data by trained professionals that will incur routine application costs well in excess of $10,000. Such a regulatory scheme may violate the Constitution's due process and equal protection clauses.

RESPONSE 11

The department cannot control the cost that may be incurred by implementation of new statutes. The department must clarify through rules how such implementation should occur and believes the proposed rules accomplish that task. The collection of geological, hydrological, and geographical data by trained professionals is required by 85-2-361, MCA.

COMMENT 12

Proposed amendments, as written, propose a level of precision that is not realistically possible even where financially capable business concerns prepare applications for groundwater diversions in closed basins. Construction of hydrologic models and collection of the required data, particularly in proposed amendments to ARM 36.12.120, is not realistically possible because natural systems are not homogenous enough to draw the conclusions sought, i.e., "Evidence and supporting information of the degree of hydraulic connection between the source aquifer and surface water sources . . . (ARM 36.12.120(6)(b)(D)(ii));" "the degree of connection between the surface water and the source aquifer to the proposed well (ARM 36.12.120(d)(v)." The department should consider verbiage that better reflects the inherently imprecise nature of local and regional hydrology such as: "Evidence and supporting information showing the presence or absence of a hydraulic connection between the source aquifer and surface water sources . . .;"

RESPONSE 12
The department believes the proposed rules accurately implement the new statutes; however, the department also agrees that professionals should be allowed some flexibility to determine the data collection and evaluation methods used based on the specifics of the water right application and the groundwater properties in the area. Please refer to Response 1.

COMMENT 13
A developer seeking industrial or domestic water supplies will find it more expedient to drill and complete individual wells producing 35 gallons or less in order to avoid the considerably more difficult process of applying for a single, and more appropriate source.

RESPONSE 13
Please refer to Response 10.

COMMENT 14
The backlog of unprocessed water applications backed up at the department is significant. It is not in the least uncommon for an applicant, particularly an industrial applicant or developer, to be engaged with the department for three years attempting to get a permit to put water to beneficial use. The complexity of the proposed amendments guarantee that an already overly burdened system is going to become more so.

RESPONSE 14
The department disagrees that the complexity of the proposed rules, as opposed to the statute, will increase review time of an application by the department. The department finds that its review time decreases when an application includes the required information and evaluations set forth in the correct and complete rules and believes that if an application conforms to the proposed rules, review time will be reduced. Nevertheless, the department recognizes that applications in closed basins are increasingly complex and take time to thoroughly evaluate.

COMMENT 15
HB 831, the source of the proposed amendments, does not contain language as restrictive as the proposed amendments.

RESPONSE 15
Please refer to Response 12.

COMMENT 16
The term "degree" should be removed from ARM 36.12.120(6)(a)(i), 36.12.120(6)(b)(ii), 36.12.120(6)(c)(d)(v), and 36.12.120(6)(f)(v). Use of the term "degree" implies that an applicant can provide evidence proving or otherwise quantifying the requested information. In light of the fact that an applicant cannot do so, use of the term "degree" will subject an applicant, as well as the department, to inconclusive hearing on every contested application and will ultimately subject an applicant to a potentially endless process attempting to present the department with a correct and complete application. The term "degree" should be replaced with "evidence addressing" and other appropriate changes in grammar to render the context correct.

RESPONSE 16
The department agrees. The term has been eliminated.

COMMENT 17
Rules need to have some flexibility to allow a scope of work that is proportional to the potential for impacts. Rather than requiring extremely detailed data collection in all cases, the rules should have an option that allows an applicant to adopt mitigation based on a very conservative set of assumptions regarding depletion and have a reasonable degree of certainty that the application will be acceptable with regard to the issue. Otherwise, these rules will exacerbate the trend for unregulated development using the individual well exemption. The department needs to allow the applicant to conservatively assume that there is a direct hydrologic connection and derive a conservative estimate of depletion.

RESPONSE 17
The department believes the commenter is suggesting that a hydrogeologic assessment report should not be required if an applicant assumes that there is a hydraulic connection between groundwater and surface water and adopts a mitigation plan. In developing rules, the department must follow the statute which requires that a hydrogeologic assessment be submitted with an application for groundwater in a basin closure area.

COMMENT 18
This provision requires the quantification of the volume, rate, timing, and location of any accretions to surface water as part of the net depletion analysis. Timing and location are only significant if there are very localized impacts to surface water associated with the project (i.e. depletion due to induced infiltration). They are not

relevant if a project intercepts groundwater providing regional recharge to a surface water body. In the latter case, the timing and location of discharge cannot be accurately estimated and are not critical to establish. Language should be added that provides for this distinction or the application will be extremely difficult to technically defend.

RESPONSE 18
The specific item referred to by the commenter has been removed from the final rules; the rules now allow the applicant more flexibility. The department recommends that as part of the net depletion analysis, the applicant evaluate the volume, rate, timing and location of any accretions to surface water relevant to the proposed project. Hydrologic considerations and physical characteristics at the project site, potential locations where adverse effects might occur, and technical and data limitations should all be considered when determining the extent of the analysis that is appropriate.

COMMENT 19
Rules specify that an evaluation of potential return flow must be included and that it must identify the volume rate, timing and location of return flows. The department needs to clarify whether this applies specifically to agricultural return flows or all potential return flows, including return flows due to domestic wastewater infiltration and lawn irrigation. In most cases this requirement will be virtually impossible to calculate with any degree of technical certainty; and therefore, it would be more appropriate to remove the word "identify" and substitute the word "estimate".

RESPONSE 19
The evaluation of return flow for a hydrogeologic assessment must include all return flow and is not limited to agricultural return flow, as specified in the statute, 85-2-361(1)(b)(iii), MCA. The word "identify" has been removed.

COMMENT 20
This provision requires estimates of volume consumed by evaporation, plant transpiration, interception losses, depression storage losses and other forms of consumption associated with the project. It is unclear when this provision would be necessary or appropriate. This information would presumably only be applicable for an irrigation application. DNRC has well established estimates for crop water use and consumption; therefore, it is not clear that this degree of analysis would be necessary. To the extent that it would apply to mitigation, the department would likely base mitigation credit on established consumptive use rates for crops historically raised on the site; and therefore, a detailed accounting of water balance components such as depression storage and interception losses would not be necessary. This requirement should be removed or clarified.

RESPONSE 20
If the commenter is referring to the standard water use requirement rules, the table for irrigation use describes an amount that may be a reasonable place to start when estimating new irrigation use. The table is not to establish crop consumption figures

for existing irrigation. Because crop water use associated with existing irrigation is so variable and fact specific, crop consumptive use must be estimated based on a consideration of the crops and soils being irrigated, actual irrigation practices, and any return flows.

COMMENT 21
Why are rules being written prior to the report that must be written by the Montana Bureau of Mines and Geology?

RESPONSE 21
Statute requires the Bureau of Mines and Geology submit a report to the appropriate legislative interim committee and the 61st Legislature (which convenes in 2009) providing a detailed analysis of the results of the review and case study. DNRC will be receiving water right applications in 2008 and 2009 that will be subject to the 2007 statute changes and finds it necessary to adopt rules now that implement the new statutes.

COMMENT 22
The department needs to add lakes under ARM 36.12.120(6)(a)(i) and better define drains to include tile drains, French drains, waste drains, etc.

RESPONSE 22
The terms referenced by the commenter have been removed as to not exclude any types of waters.

COMMENT 23
There needs to be an exemption from the rules for non-consumptive applications.

RESPONSE 23
Statute requires that if an application is for groundwater in a basin closure area, a hydrogeologic assessment must be submitted that includes the information required by statute. These rules allow an applicant for a nonconsumptive application to demonstrate there will be no net depletion.

COMMENT 24
Limiting the potentially affected area to the boundaries identified by USGS and used by the Water Court is not scientifically sound or defensible.

RESPONSE 24
The basin limits are identified in statute for the purposes of the hydrogeologic assessment. Expanded boundaries may be necessary for evaluation of the permitting criteria.

COMMENT 25
Define depression.

RESPONSE 25
The term "depression" has been removed from the rule.

COMMENT NO. 26
Under original ARM 36.12.120(6)(a)(ii), commenter notes that plant transpiration should be eliminated and replaced with evapotranspiration, which includes both soil and plant evaporation.

RESPONSE 26
The department agrees and has changed the wording to reflect the commenter's suggestion.

COMMENT 27
The proposed amendments are required to implement House Bill 831 and such rules must be consistent with, and not exceed the requirements for groundwater permitting set forth in HB 831. In the commenter's view, the proposed amendments impose restrictions and requirements on what must be provided in a hydrogeologic assessment in excess of the requirements for such assessment set forth in HB 831. In particular, the proposed amendments to ARM 36.12.120(6)(b)(ii) through (iii) and (c) through (g) far exceed the parameters for hydrogeologic assessment set forth in Section 15 of HB 831, now codified at 85-2-361, MCA.

RESPONSE 27
The department believes the proposed rules accurately implement the new statutes. However, the department also agrees that professionals should have some flexibility to determine the data collection and evaluation methods necessary to address the specific water right application and to reflect the groundwater properties in the area.

COMMENT 28
The proposed amendments establish a system whereby prospective permittees are priced out of using water before they even get past the application process. The requirements set out in the proposed amendment to ARM 36.12.120(6)(b)(ii) through (iii) and (c) through (g) would make the preliminary analysis required to submit a permit application cost-prohibitive for the majority of agricultural and residential users. Particularly for permittees attempting to develop workforce housing and other subdivisions, such costs will be passed on to future homeowners, resulting in inflated housing prices solely to recover the cost of obtaining potable water. Of course, this cost analysis does not even consider the cost for actual implementation of groundwater development under the proposed amendments, which is an additional undue and, for most water users, unaffordable burden. Under Article IX, Section 3 of the Montana Constitution, all waters of the state are "for the use of its people…"

The system that will result from the proposed amendments is a system in which the people no longer have the ability to use the water, either because the process is so obtuse or so cost-prohibitive.

RESPONSE 28
The department notes that while all waters of the state are for the use of its people, such use cannot impinge on senior water rights. New groundwater use in closed basins, the subject of these rules, is limited to appropriations that will not adversely affect senior water rights. An applicant may not be able to easily obtain a new groundwater right, but there are other options available to the applicant, including obtaining an existing water right and changing it to a new purpose. Also, please refer to Response 11.

COMMENT 29
DNRC's role in water use has been to administer the people's use of the water (see 85-2-101, MCA). Under the proposed amendments, DNRC's role as an administrative agency is exceeded such that DNRC will no longer be facilitating and administering the use of water, but rather will effectively be prohibiting any future new uses of water. 85-2-370, MCA (Section 22 of HB 831), also charges DNRC with orienting rules "toward the protection of existing rights from adverse effects from net depletions..." However, throughout the proposed amendments net depletion is equated with adverse effect, thereby failing to recognize, as the Montana legislature did in HB 831, that net depletion does not always result in adverse effect.

RESPONSE 29
Please refer to Responses 8 and 29.

COMMENT 30
The very last provision in the proposed amendment raises significant concern . The proposed amendment to ARM 36.12.120(6)(h) states, "Information required by the hydrogeologic assessment may not be sufficient to meet applicable criteria under 85-2-311, MCA, including but not limited to adverse effect to a prior appropriator." In other words, a permit applicant can expend every last cent they have to show that there is no net depletion that results in adverse effect, and DNRC can still find adverse effect. Once DNRC makes a determination that a hydrologic assessment demonstrates no net depletion or shows that even though there is net depletion, there will be no adverse effect, the application should then go forward. If DNRC disagrees with the determination that there is no adverse effect, that disagreement should be resolved before the application goes to public notice so that the applicant can prepare an augmentation plan if DNRC is going to require one.

Otherwise, not only is the process a waste of the applicant's time and money, it also squanders DNRC's already admittedly short resources, as DNRC will process an application and put it out to public notice when DNRC has already made the determination that the application is deficient for lack of an augmentation plan. Water users need and deserve regulatory certainty before investing what will be considerable amounts of time and expense into applying for beneficial use permits for groundwater. The proposed amendment to ARM 36.12.120(6)(h) does not provide that regulatory certainty.

RESPONSE 30
The new statute requires an applicant to submit a hydrogeologic assessment with an application located within a basin closure area and determine net depletion to surface water (85-2-360(3)(a), MCA) and whether the net depletion will result in adverse affect to a senior water right. The statutory scope of the hydrogeologic assessment may not be sufficient in all cases to evaluate adverse effect or other criteria in 85-2-311, MCA. An applicant should submit information sufficient to evaluate adverse effect and an applicant can include that information in the hydrogeologic assessment. If the applicant determines that the net depletion will result in an adverse affect, then the applicant must submit a aquifer recharge plan or a mitigation plan as required under 85-2-362, MCA, along with the water right application and hydrogeologic assessment.

As required by statute, the department must proceed to public notice if the application meets the correct and complete rule requirements and the rules pertaining to a basin closure. Prior to public notice however, the department will draft an Application Review Form that will identify remaining issues that need to be resolved. Also, please refer to Response 24.

COMMENT 31
The rules as proposed are contrary to the legislative intent expressed in the preamble to HB 831, and will result in a groundwater permitting program which in effect prevents Montana citizens from obtaining permits in these areas to use groundwater for beneficial purposes.

RESPONSE 31
Please refer to Response 28.

COMMENT 32
Should DNRC continue to pursue the proposed rules, the agency should prepare the appropriate environmental review under MEPA, as well as the analysis of the social and economic impacts associated with the proposed action, under both MEPA and MAPA. By making groundwater permitting virtually impossible, or if theoretically possible, economically unattainable for most agricultural producers, the new rules will no doubt have significant, social, economic, and environmental effects. If these rules are adopted, they will impact not only water use in these basins, but also land use practices associated with the development of land for subdivision purposes. These indirect and cumulative impacts of the rules should be assessed. MEPA applies to agency rulemaking, and applies directly to the proposed adoption of the rule amendments at issue. Prior to adoption of the rules as proposed, DNRC should conduct the appropriate level of MEPA review, which may involve an EIS given the scope of the proposed action.

RESPONSE 32
The department is preparing an environmental evaluation of the proposed rules.

COMMENT 33

ARM 36.12.101(37): The proposed definition of "net depletion" is not consistent with the term as provided in 85-2-360, MCA, the statutory provision for which the proposed rule is connected. Under 85-2-360, MCA, "net depletion" is included in the statute to determine whether net depletion results in adverse effect on a prior appropriator (see 85-2-360(3)(a), MCA). Under the statute, the hydrogeologic assessment is used by the applicant to analyze whether there is a result of adverse effect by the proposed ground water development. As 85-2-360(5), MCA, makes clear, as does 85-2-401(i), MCA, the prediction of net depletion does not equate to a determination of adverse effect. The DNRC's proposed definition of "net depletion" is not consistent with the term as used in 85-2-360, MCA.

RESPONSE 33
Please refer to Response 8.

COMMENT 34
Amendments a. (1) through (5) of the existing rules in 36.12.120 should also be deleted. These rules address whether or not applications in these basins can be "processed," an issue which was clarified by HB 831. DNRC's retention of these rules will only lead to further confusion over whether the agency may "process" an application in the first instance. b. (6)

RESPONSE 34
The department agrees and has made the change as noted by the commenter.

COMMENT 35
DNRC should provide examples for the various basins and aquifers in the area affected by the rules, on what compliance with the rules will cost. In fact, the rule states the net depletion analysis includes "but not limited to" the identified factors, meaning DNRC may require anything else a particular application reviewer may desire. Before considering passing the rules, DNRC should propose to the public, and policy makers, an estimate of compliance costs associated with meeting the terms of the rules.

RESPONSE 35
Please refer to Response 11.

COMMENT 36
ARM 36.12.120(6)(a)(i): What is meant by the term "degree of hydraulic connection" and how will such a determination be achieved or interpreted?

ARM 36.12.120(6)(a)(iii) and (iv): By adding "timing and location" the proposed rules greatly add to the cost and complexity of the data or model required. At best, any such assessment is an arbitrary guess. If required, DNRC should be willing to describe for applicants in rule, how these factors will be determined, and the effect of the factors in review of the application by the agency.

RESPONSE 36
A source aquifer is hydraulically connected to surface water if water can move between the aquifer and surface water. Hydraulic connection can be evaluated by inspection of geologic maps, analysis of pumping tests, water level monitoring and comparison of water chemistries and temperatures. The language “degree of hydraulic connection” has been replaced by “evidence addressing the hydraulic connection” in recognition that determination of hydraulic connection is imprecise. 85-2-361(1)(a), MCA, states that a “hydrogeologic assessment” must describe … “predicted net depletion, if any, including the timing of any net depletion …” 85-2-362(3), MCA, states “An aquifer recharge plan must include: …(c) when and where, generally, water reallocated through exchange or substitution will be required; …” Also, please refer to Response 1.

COMMENT 37
ARM 36.12.120(b): By including the analysis of the static groundwater elevations relative to surface water elevations, the proposed rules become increasingly arbitrary, unless some rationale for this data is established. Both elevations will vary seasonally, monthly, weekly, daily, and even hourly. What quantum of such data is expected and to what degree? A few piezometer fields, or a whole field of monitoring wells throughout the "potentially affected area"? What scope of surface water elevations is expected and utilizing what methodologies?

RESPONSE 37
This language has been stricken from the proposed amendment to the rules. Recognizing that temporal variations exist in groundwater and surface water observations, a hydrogeologist, qualified scientist, or professional engineer can still utilize these measurements as evidence relative to the hydraulic connection between the aquifer and surface water bodies. Groundwater level data collection can range from weekly to monthly and must be measured to the nearest 0.01 foot. A few wells constitute the minimum data-collection network; however, groundwater levels can be measured in as many wells as is practical, depending on the circumstances of a particular application. Also, please refer to Response 1.

COMMENT 38
ARM 36.12.120(6)(b)(i): The requirement of locating groundwater boundaries in the potentially affected area is quite complex. It may be more appropriate for DNRC to identify the same for areas of potential development in the basins at issue. If not, DNRC should describe with particularity how this will be achieved by the applicant, and what level of data and analysis will suffice. Is (A) through (D) the extent of data required? If so, the rule should clarify that this data suffices.

ARM 36.12.120(6)(b)(ii): Again, the term "degree of hydraulic connection" is used. What is the extent of this term in regard to regulatory compliance or application of the rules? Several factors are then listed for determining surface water source aquifer connections, but the assessment "is not limited to" the identified factors. What else may be involved?

ARM 36.12.120(6)(f): Please identify how an applicant will identify these aquifers and these locations for the potentially affected area. Can DNRC produce these? If not, how will DNRC review the data, and how would DNRC determine the sufficiency of the same?

RESPONSE 38

This language has been stricken from the proposed amendment to the rules as much of it is already codified in statute (85-2-361, MCA) or duplicated in rule. Recognizing the potentially complex assessment of the aquifer extent and properties, in addition to interaction between groundwater and surface water, the statute requires that the hydrogeologic assessment must include data or a model developed by a hydrogeologist, qualified scientist, or qualified licensed professional engineer. The minimum information required by the hydrogeologic assessment has been removed from the rules as it is already required by statute. Additional information submitted to locate and identify groundwater and surface water relationships will be left to the discretion of the qualified professional. The term “degree of hydraulic connection” has been replaced by “evidence addressing the hydraulic connection”. Also, please refer to Response 1.

COMMENT 39

ARM 36.12.120(6)(b)(ii)(H) and (I): From what source of information are applicants expected to derive this information? Is the applicant expected to manufacture or create this data with an application (i.e. test wells, monitoring wells, piezometer fields, surface water bed measurements), or will examining existing available data, if any, be sufficient?

ARM 36.12.120(6)(b)(ii)(K): How will the applicant know whether "another" has made the surface water measurements. Is this limited to public record searches?

ARM 36.12.120(6)(b)(iii): Is the information from (a) from the DNRC database or what may exist on the ground? Does DNRC expect the applicant to field truth or survey claim information, or rely on Water Court information?

ARM 36.12.120(6)(c)(ii): By including "interception losses," "depression storage losses," and "all other forms of consumption" DNRC is in effect asking an applicant to demonstrate the hydrologic cycle for the project area. In the project area, why does the applicant need to describe how much rain adheres to leaves, grasses, or passing automobiles? Why does the applicant need to identify small surface depressions (a/& puddles) and include the evaporation loss from those? This particular subsection epitomizes the problems with the proposed rules and the level of analysis required.

ARM 36.12.120(6)(d): In determining drawdown effects to what extent is the applicant expected to assess location or timing to any degree of accuracy? For deep aquifers, how is one to track the route of water molecules to the point of discharge to

surface water? How much would such an analysis cost? Does DNRC propose any methods or standards by which the agency itself would judge such a demonstration?

RESPONSE 39
This language has been stricken from the proposed amendment to the rules. The amount of information required by the applicant will be dependent on the complexity of the hydrogeological setting and will require the use of existing data sources as well as data obtained and analyzed from the aquifer test. Reference to measurements by “another” recognizes that measurements may be performed by an agent of the applicant and that additional information may be found in assessments and reports made by a third party not related to the applicant. The detail of the analysis of stream depletion will depend on the complexity of the hydrogeological setting. In some cases, it may be sufficient to use analytical models to describe the rate and timing of the depletion. In other cases, a numerical model may be required. Please refer to Response 1.

COMMENT 40
What is meant by "degree of connection" and how will the term be used in determining compliance with the rules? ARM 36.12.120(6)(d)(vii) and (viii): How are confining layer properties and location and type of boundaries to be explained? What standards or methods will be used to assess this? If boundaries are encountered, to what extent do they need to be located?

ARM 36.12.120(6)(e): Is the evaluation of return flows for the project area or for the potentially affected area as a whole?

ARM 36.12.120(6)(f): Why is "gross surface water depletion" assessed? Again, how will the timing or location be realistically assessed, particularly from deep well projects?

ARM 36.12.120(6)(g)(iii): Water balance assessments for an aquifer and the surface water for returns seems quite complex. Why doesn't the assessment of (iv) suffice for the entire body of proposed rules?

RESPONSE 40
This language has been stricken from the proposed amendment to the rules. The term “degree of hydraulic connection” has been replaced by “evidence addressing the hydraulic connection”. Provision and assessment of evidence addressing the hydraulic connection between the source aquifer and surface water will be performed by a qualified professional. Similarly, the qualified professional will identify the location and extent of boundary conditions and other aquifer characteristics within the hydrogeologic assessment. The evaluation of return flows and water balance will examine the impacts imposed by the proposed project on an existing system. Also, please refer to Response 1.

COMMENT 41

DNRC should rewrite the rules to actually describe how an applicant can apply the concept of net depletion as promulgated in HB 831 to an analysis of whether or not another appropriator is adversely affected by the proposed groundwater development. Such a regulatory approach would allow applicants and others to assess whether or not net depletion results in adverse affect as prescribed by HB 831 and whether to pursue a permit from the agency. DNRC's proposed rules add great expense and uncertainty to the applications and make the regulatory compliance difficult, if not unachievable.

RESPONSE 41

While 85-2-360(5), MCA, statutorily precludes an automatic assumption that net depletion to a surface water body creates adverse effect, the department recognizes that basin closures were statutorily adopted (85-2-330, 85-2-336, 85-2-341, 85-2-343, and 85-2-344, MCA) or administratively closed pursuant to 85-2-319, MCA, because streams within their boundaries were deemed fully or over-appropriated.

Impacts to surface water from groundwater appropriations can vary. Whether a senior water right will be adversely affected depends on a number of factors that cannot be generally described. Therefore, the determination of adverse affect must be based on the proposed application. Also, please refer to Responses 1 and 11.

COMMENT 42

More specifically, the rules require advanced scientific evaluations and analyses that require extensive data which are not readily available and which in most circumstances are not practically attainable. Even if a major data collection effort were undertaken, there would still be significant uncertainties, including the lack of historical data. Requiring such analysis in normal/complex hydrogeologic settings will more likely than not lead to "imaginary" interpretations and "fictional" predictions for the purpose of defining the degree of hydraulic connection, rate, and timing analyses that are defined in the proposed rules. As an illustration, numerous streams, springs, ditches and other water features are present in the Gallatin Valley. It is more likely than not that a computed cone of depression would intercept several surface water features. It is not practical to reliably quantify the degree of hydraulic connection or the timing, location, and rate of depletion for each stream/ditch/drains/spring in such multiple stream settings.

RESPONSE 42

85-2-361(b), MCA, states “In predicting net depletion of surface water from a proposed use, consideration must be given, at a minimum, to: (iv) the locations of surface waters within the area described in subsection (2)(a)(i)”. The department agrees that it may not be practical to quantify hydraulic connection and net depletion for every surface water body that is identified; it is necessary to provide evidence to evaluate whether a prior appropriator is adversely affected and, if so, to design a mitigation or aquifer recharge plan. The commenter seems to suggest that since data may be difficult to obtain, less information should be required. A water right can be granted, and must be based on the criteria set forth in statute, including a

determination of adverse affect which is required for the protection of senior water rights. A basin closed to new appropriations means that new water use is limited or may be authorized with conditions that protect senior water rights.

COMMENT 43
The proposed rules make it practically impossible to "prove" that any potential net depletion or adverse impact will not occur or that they will be "insignificant". For all intents and purposes, the rules establish that any and all future groundwater appropriations in a closed basin will result in net depletion, and hence, cause adverse impacts (however small).

RESPONSE 43
Montana's water laws do not allow for "insignificant" adverse effect. If adverse effect will occur, then an applicant for a new water use must mitigate the effect no matter how small. Also, please refer to Response 8.

COMMENT 44
All applicants will be required to implement either mitigation or aquifer recharge. If this is indeed the policy of the state of Montana, then simply require mitigation and establish simple and plain requirements for mitigation. For example, let it be assumed that a proposed residential development proposes to mitigate adverse impacts using existing surface water rights. A plain and simple rule would be for the proposed development to retire irrigated acreage, thus leaving water in a stream to offset depletions. There are instances where mitigation (or aquifer recharge) is feasible. There are many instances where it will not be feasible. For example, it may not be feasible for a proposed development located in an area lacking historical irrigation. Where can it purchase or obtain water rights to eliminate net depletions? Will it be allowed to off-set "adverse impacts" say ten or twenty miles down-stream where there are water rights? Or will the beneficial use application simply be denied because of location issues?

RESPONSE 44
The rules do not limit the scope of mitigation or aquifer recharge plans as the comment appears to suggest. The “plain and simple” approach where irrigated acreage is retired leaving water in the stream to mitigate adverse effects caused by net depletion may be acceptable in many instances. However, 85-2-362(1), MCA, states “An applicant whose hydrogeologic assessment conducted pursuant to 85-2-361 predicts that there will be a net depletion of surface water shall offset the net depletion that results in the adverse effect through a mitigation plan or an aquifer recharge plan”. Therefore, the department does not have the discretion to waive the need for mitigation or aquifer recharge in instances that it is not feasible as implied by this comment.

The department does not have the authority to make the assumption or decision suggested by the commenter. The commenter raises good questions pertaining to where water rights can be obtained to eliminate net depletions, or where mitigation water must be located. The department encourages an applicant to present an

application that the applicant believes will meet the criteria required to obtain a water right.

COMMENT 45
Consideration needs to be made to develop a uniform, consistent, realistic set of guidelines that can be followed so that each engineer or scientist knows approximately where the applicant stands at the end of the application process.

RESPONSE 45
Please refer to Response 1.

COMMENT 46
Specific Comment 1 on ARM 36.12.101(37): It is generally not practical nor feasible to quantify the timing and location of these depletions in a complex ground/surface water system. For example, the groundwater appropriation point of diversion may be located several miles from the nearest gaining surface water.

RESPONSE 46
The department acknowledges that net depletion evaluation in a complex geologic setting may be difficult. However, the statutes require that a net depletion analysis be conducted. The amount of potential net depletion can be estimated by approximating consumptive use for the proposed appropriation. Rate and timing of stream depletion can be grossly approximated in a complex geologic setting; net depletion will approach a constant rate as distance from a stream increases. Location of the net depletion can also be conceptualized based on details of the complex geologic setting.

COMMENT 47
It may be appropriate to define or establish "non-significant" net depletion criteria in the same manner that Montana non-degradation laws work (e.g., a discharge is non-significant if it does not cause an exceedance of a trigger concentration).

RESPONSE 47
Streams in basin closure areas have been deemed “fully or over-appropriated” by the Montana legislature and administratively by the department. Montana's water laws also do not allow for "insignificant" adverse affect. Also, please see Response 44.

COMMENT 48
Specific Comment 2 on ARM 36.12.101(49): It would be helpful if the term concept "affected groundwater" was more succinctly defined. Theoretically, this concept could include most of the groundwater in a basin.

RESPONSE 48:
The commenter raises a good point, however no two water right applications are the same, and so any attempt to define "affected groundwater" would be impossible.

Every applicant will need to evaluate and determine what groundwater may be affected based on the specifics of the application. An applicant will need to document how the "potentially affected area" was determined.

COMMENT 49
Specific Comment 3 on ARM 36.12.120(6)(a)(i): It would be helpful if the concept of "degree of hydraulic connection" and "potentially affected surface water" were defined. In other words, is this a qualitative or quantitative assessment? If it is meant to be quantitative, this requirement is practically infeasible in most natural settings, i.e., like the Gallatin Valley.

RESPONSE 49
The term "degree of hydraulic connection" has been replaced by "evidence addressing the hydraulic connection". The "potentially affected" phrase of the term "potentially affected surface water" has been deleted.

COMMENT 50
Specific Comment 4 on ARM 36.12.120(6)(a)(iii): It is generally not realistic in most natural systems to reliably project the propagation of drawdown or surface water depletions if the well is located a significant distance from the surface water. It is even more unrealistic to reliably quantify the rate, timing and location of any resulting surface water depletion at distant locations in most geologic settings. It may be reasonable to establish a preliminary drawdown criterion. The minimum amount of drawdown required for assessment purposes should be 0.1 feet or greater. Use of a 0.01 feet draw down as a criterion is unreasonable.

RESPONSE 50
85-2-360, MCA, specifies a "hydrogeologic assessment . . to predict whether the proposed appropriation right will result in a net depletion of surface water . .". A net depletion evaluation typically quantifies the amount (i.e. rate and volume) of depletion; in addition, the hydrogeologic assessment of 85-2-361(1)(a), MCA, specifies that ". . . timing of any net depletion" is also described. In most geologic settings, net depletion approaches a more or less "constant" rate as distance to a stream increases. The department acknowledges that a net stream depletion evaluation constitutes an approximation or estimation and that it cannot account for stream depletion on a "drop-by-drop" basis, but encourages applicants to collect adequate information and submit as credible a net depletion evaluation as can reasonably be accomplished.

COMMENT 51
Specific Comment ARM 36.12.120(6)(c)(ii)(A): The water use requirements already established in the existing administrative rules should also be allowed as an appropriate method.

RESPONSE 51
Please refer to Response 20.

COMMENT 52
Specific Comment 6 on ARM 36.12.120(6)(g): The water balance analysis required in the rules could be interpreted as incomplete as it does not clearly establish that all accretions aside from mitigation or aquifer recharge are to be included. Although the draft rule goes on to discuss minutia and trifling details for evaporative losses, it is unclear if its counts for other potential accretions such as runoff from impermeable surfaces (e.g., driveways, roofing), etc. The rules should be clarified accordingly so that it is clear that a complete water balance addressing all hydrologic factors including runoff from impervious surfaces, detention basin recharge, etc. is to be included.

RESPONSE 52
Please refer to Responses 1 and 8.

COMMENT 53
Commenter states rules are adequate as written and should not be changed except for further definition in some areas.

RESPONSE 53
The department appreciates the commenter's time and effort put forth reviewing the proposed rules.

COMMENT 54
Commenter referred department to, and provided a copy of USGS Circular 1186, Sustainability of Ground-Water Resources.

RESPONSE 54
Commenter did not specifically point the department to sections of the circular that pertain to comments the commenter has about the proposed rules. However, department reviewed the circular and notes that information contained in the circular describes how groundwater development affects surface water.

COMMENT 55
Commenter referred the department to and provided copy of a May 31, 2002, "Report on Groundwater-Surface Water Interactions" written by Bill Uthman, Hydrogeologist, Water Management Bureau, DNRC.

RESPONSE 55
Commenter did not specifically point department to sections of the document that pertain to comments the commenter has about the proposed rules. However, the department reviewed the document and notes that information contained in the document describes how groundwater development affects surface water.

COMMENT 56
Commenter suggested that applicant and department meet prior to submission of a water right application to establish the criteria for the net depletion analysis, agree

on the model that will be used, and other requirements based on the complexity of an application.

RESPONSE 56
The department encourages applicants to contact a department hydrogeologist prior to filing a water right application, particularly in a basin closure area.

COMMENT 57
The proposed rule fails to address those hydrogeologically complex cases in which anyone will have a difficult time locating and characterizing the source aquifer. Commenter recommends that the rules for "net depletion" allow a "bucket-for-bucket" mitigation, meaning an applicant should simply replace every acre-foot of estimated new consumptive use from new groundwater pumping with an acre-foot of a senior, historically-consumed surface water right which would be changed to a "mitigation" purpose.

The need to characterize the timing and reach of the depletion would still remain, at least to the extent that it affects the applicant's mitigation plan. The applicant can then make the determination of whether offering more mitigation water than he or she might under a rigorous hydrogeologic analysis of net depletion is worth the trade-off of predictability and ease of computation.

This mitigation approach will need the water to be returned within the reach of stream where the groundwater's pumping impacts are likely to show up, and the mitigation water should recharge the stream during roughly the same time as the depletion. Flexibility can still be built into meeting the timing and reach requirements. This analysis will be less expensive and less demanding in the complex cases that the hydrogeologic assessment currently proposed by the "net depletion" rules.

RESPONSE 57
The department does not have the authority to waive the requirement for a hydrogeologic assessment or make other decisions proposed by the commenter. Statute requires that if an application is for groundwater in a basin closure area, a hydrogeologic assessment must be submitted that includes the information required by statute.

Offsetting 100 percent of net depletions (bucket-to-bucket mitigation) to surface waters is the ideal standard for an application in a closed basin. However, the department cannot support the total elimination of the required hydrologic assessment even if an applicant proposes to mitigate 100 percent of the net depletion. The location and timing of mitigation would have to be considered to evaluate whether senior water right holders will be adversely affected by a new appropriation. Inadequate information about the complexity of groundwater/surface water interactions would place the department in the difficult situation of having no facts to base the decision to grant, modify, or deny a new water right and associated

change. The burden regarding adverse effect would shift from the applicant to the department and objectors.

The Water Use Act purposefully placed the burden of proving no adverse effect to senior appropriators on the applicant. This was a departure from prior law. Where there is a lack of data or failure to prove affirmatively lack of adverse effect, a water right permit application cannot be issued.

COMMENT 58
While proposed ARM 36.12.120(6)(b)(iii)(B) requires the applicant to "list and map" all groundwater rights within the "potentially affected area," the proposed rule does not take the next step and ask how these existing groundwater pumpers change local groundwater flow characteristics.

RESPONSE 58
The department believes the commenter's concerns will be addressed in an applicant's analysis of physical and legal water availability.

COMMENT 59
Proposed rule ARM 36.12.120(6)(b) asks the applicant to determine the "degree of hydraulic connection" between the source aquifer and potentially affected surface waters. Subsection 6(b)(i) then asks the applicant to establish the location of the aquifer boundaries. Subsection 6(b)(i)(B) should include the word, "results" after "testing" (the last word in that subsection). Subsection 6(b)(i)(C) should first ask the applicant to provide the basic measured properties of the aquifer, and then ask for the applicant's derived properties. This means that the applicant would first be asked for the testing results that determine the measured properties of: K (hydraulic conductivity), b (thickness), h (water levels or head), and S (storage coefficient). From these properties, sub-section 6(b)(i)(C) should then ask the applicant for the derived properties of : T (transmissivity), flow rate, volume, and direction of flow, and how these change with time. After the first two words of subsection 6(b)(i)(D), "the presence," the words "and properties" should be added.

RESPONSE 59
Net depletion does not depend on the flow rate, volume, and direction of groundwater flow. In general, net depletion depends on distance from a well to surface water, aquifer transmissivity, and the location and nature of aquifer boundaries. The commenter incorrectly identifies measured and derived properties. Transmissivity and aquifer thickness are measured or estimated properties and hydraulic conductivity is derived. Storage coefficient is extraneous information for a net depletion analysis. Estimates of aquifer properties from an aquifer test are valuable, but evidence of hydraulic connection and aquifer boundaries are key to what to do with those properties.

COMMENT 60

ARM 36.12.120(6)(c) should be modified to require both flow rate and volume for water diverted and consumed: "The flow rate and volume of water diverted and the flow rate and volume of water consumed by a proposed project must include an analysis of:…"

RESPONSE 60
The department agrees in part. The rule has been modified to include a monthly volume only. If needed, a flow rate can be calculated using the monthly volume figure.

COMMENT 61
The term "wetlands" should be added to the list of potentially affected surface water throughout ARM 36.12.12.120(6). Specifically, this would be in subsections (6)(a)(i), (6)(b)(ii), and (6)(g)(iv).

RESPONSE 61
The department has eliminated specific references to potentially affected surface water.

COMMENT 62
If an applicant intends to fully replace calculated depletions through an aquifer recharge plan, based on rate and timing of depletions, it appears that the information requested may be excessive and not particularly useful for some applications.

RESPONSE 62
Please refer to Responses 17 and 57.

COMMENT 63
The rules have the negative effect of forcing development of individual wells using the permit exception for groundwater wells that are less than 35 gpm up to ten acre-feet rather than developing central water systems.

RESPONSE 63
Please refer to Response 10.

COMMENT 64
ARM 36.12.120 (6)(a)(i): This paragraph references 85-2-360 through 85-2-362, MCA. To the best of my knowledge, these statutes have not yet been published. The state should not ask the public to comment on rules for which the statutes have not yet been written. To this end, I request that you postpone this rule making process until after such time that the statutes become available. The review package I received should have included them.

RESPONSE 64
The new statute became effective upon passage and approval which was on May 3, 2007. The department proceeded to draft rules based on the language passed in HB 831. On July 24, 2007, Legislative Services made the MCAs available. If the

commenter would have contacted the department, the website address for the statute language would have been provided, and if requested, a copy of the draft statute with codifications.

COMMENT 65
ARM 36.12.120(6)(b)(i)(C): Please change this text as follows: “the extent (vertical and lateral) and properties of a source aquifer (hydraulic conductivity, transmissivity, storage coefficient, hydraulic gradient, and flow direction, rate of movement, and water availability) and confining layers; and…" It is not clear as to what is being asked by the terms "rate of movement" and "water availability". To ask for hydraulic gradient is consistent with the other information of the sentence.

RESPONSE 65
“Rate of movement”, or flow rate, and direction of groundwater flow, as referenced in 85-2-361(2)(iii)(E), MCA, are not necessary to an estimation of net depletion. A determination of net depletion depends on the hydraulic properties of the aquifer, distance from the production well to the stream, and hydraulic connection with the stream. Aquifer geometry determination, rate of movement, and direction of ground water flow (i.e. terms mentioned by the respondent) are important to general hydrogeologic environment characterization requirements of 85-2-361(1)(a), MCA, but not to net depletion analysis. A consumptive use estimate is most important and quantifies the volume of the net depletion. The net depletion evaluation identifies the rate and timing of the net depletion volume already identified in the consumptive use estimate analysis. However, an applicant must include all of the information required by 85-2-361, MCA, in its hydrogeologic assessment.

COMMENT 66
ARM 36.12.120 (6)(b)(i)(H): Please edit this to read “…, as determined by estimation or measurements of static water…” These rules appear to be commingling “direct surface water influence” determination with net stream depletion. I would expect the vast majority of submittals will calculate stream depletion based on consumptive use and a simple stream-aquifer model. There is no need for much of the hydraulic continuity work under this condition. It will not be necessary in many cases to have measurements. DNRC could require measurements if someone is trying to make a case of no connection to surface water, but should not require them if this condition is not being challenged.

RESPONSE 66
ARM 36.12.120(6)(b)(i)(H) has been deleted. Also, please see Response 1.

COMMENT 67
ARM 36.12.120(6)(b)(i)(I) and (J): Please add immediately before semicolon to both (I) and (J) “…, as available or as appropriate;” It is not imperative that these data be available in order to assess how a well will affect surface water in many cases. In most cases this information does not exist. There needs to be more flexibility in these data requirements written into the rules. As above, if someone is presenting a

case of no hydraulic continuity then they have more data needs than someone who is not.

RESPONSE 67
ARM 36.12.120(6)(b)(i)(L) and (J) have been deleted. Also, please see Response 1.

COMMENT 68
ARM 36.12.120(6)(c)(i): I am not understanding what is being asked or its purpose. This information needs to clarify what is being asked of the applicant. It seems to ask if the use of water is a beneficial use in the normal quantities of water that are normally used by the same use. If my interpretation is correct, I think this sentence could be deleted, as beneficial use is covered by 85-2-311, MCA.

RESPONSE 68
The department has revised this rule to better describe its intent.

COMMENT 69
ARM 36.12.120(6)(c)(ii): This section should ask for “estimates of the consumptive use of water” period. It is okay to say “such as from evaporation and evapotranspiration. It is not necessary to go into this at length. You have probably missed some consumptive uses. What about beverage plants? And other non-evaporative consumptive uses? This section needs to be more general.

RESPONSE 69
The department agrees and has revised the rule language.

COMMENT 70
ARM 36.12.120(6)(c): In general, this entire section appears to presume that consumptive use and water projects in general will be domestic or municipal. I suggest you write the section much more generally to be inclusive of many other types of projects.

RESPONSE 70
The department did not intend to make the presumption about specific purposes. The department has revised the rule to be general in nature to any type of project.

COMMENT 71
For your consideration, we offer the following definition: "hydrogeologist, a qualified scientist, or a qualified licensed professional engineer is a scientist or engineer who has received a baccalaureate or post-graduate degree in the natural sciences or engineering and has sufficient training and experience in ground water hydrology and related fields as may be demonstrated by state registration, professional certifications, or completion of accredited university programs that enable that individual to make sound professional judgments regarding ground water hydrology.”

RESPONSE 71

The department believes "hydrogeologist, a qualified scientist, or a qualified licensed professional engineer" adequately describes who should collect data for the hydrogeologic assessment. The required data to be submitted and described in subsequent statutes may be inadequate if not collected by, or under the guidance of a person knowledgeable in data collection and evaluation of the results.

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

/s/ Mary Sexton
MARY SEXTON
Director
Natural Resources and Conservation

/s/ Anne Yates
ANNE YATES
Rule Reviewer

Certified to the Secretary of State on January 22, 2008.